EVALUATION OF A DAILY ACTIVITY PROGRAM FOR EARLY SCHOOL-AGE CHILDREN IN A RURAL SETTING

by

Stacee Lyders

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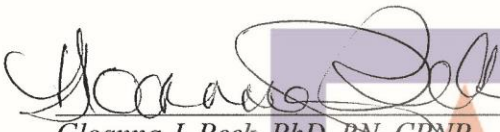
As members of the DNP Project Committee, we certify that we have read the DNP project prepared by *Stacee Lyders*, titled *Evaluation of a Daily Activity Program for Early School-Age Children in a Rural Setting* and recommend that it be accepted as fulfilling the DNP project requirement for the Degree of Doctor of Nursing Practice.



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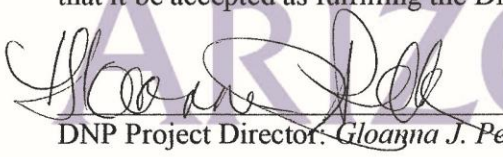

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Be strong enough to stand alone,
Smart enough to know when you need help,
And brave enough to ask for it.
~Ziad K. Abdelnour

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DEDICATION

This project is dedicated to all the past and future children I have the immense privilege to join in their journey to health and wellness. The lessons you provide me is irreplaceable.

To my daughters: I was not the nurse I am now before you blessed me as your momma. You make me better and remind me daily you are individuals with different needs to be physically and mentally well.

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ABSTRACT

Background: Obesity is greatly impacting people, adults and children, in the United States (U.S.). Approximately 17% of children ages six to 11 years old in the U.S. are obese. Obesity puts children at increased risks of physiological and psychological conditions in childhood and into adulthood. Montana youth are more overweight or obese than the national average of 17%.

Purpose: The purpose of this Doctor of Nursing Practice (DNP) project was to determine if a structured activity program (i.e., The Daily Mile program) could be implemented in the first thru third grade classrooms of two Montana schools.

Methods: The Daily Mile program was introduced to two schools via PowerPoint presentations. Six classrooms implemented the program for a minimum of eight weeks. Teachers kept a daily log and participated in two surveys: initial and follow-up. School administrators were sent an additional survey.

Results: Six teachers and two school administrators at two schools participated in this DNP project. The majority (83.3%) of the teachers agreed with the program evaluation statements during the initial teacher survey. Per the daily logs, teachers reported completing The Daily Mile 49% of the school days during the implementation period. All the teachers expressed an intent to continue to The Daily Mile program in their classrooms. Four teachers participated in the follow-up survey reporting they continued to utilize the program zero to three days per week. Three themes were identified during this project: program support, teachers' feedback on students' participation, and barriers. Administrators agreed that schools can participate in the obesity prevention. Additionally, both reported the resources needed for this program were reasonable and a wish to see the program continue in their schools.

Discussion: The projects' results were similar to what has been found in the literature about school-based obesity prevention programs. Stakeholders support these types of programs in schools. However, barriers (i.e., time constraints) exist making it difficult to implement in an educational setting. More research is needed to evaluate The Daily Mile program's impact on the rate of childhood obesity.

INTRODUCTION

Background

Childhood obesity is a serious, preventable health risk for children. Approximately one in six children ages six to 11 years in the United States (U.S.) are obese (Healthy People, 2016). There is no significant difference in prevalence between boys and girls in this age group (Ogden, Carroll, Fryar, & Flegal, 2015). Although it is reassuring that the obesity rate for six to 11 year olds has remained steady since 2008, research suggests that interventions should be implemented in this vulnerable population (Ogden et al., 2016). Healthy People sets 10-year health improvement goals in the U.S. and one current recommendation is to "reduce the proportion of children aged 6 to 11 years who are considered obese" (Healthy People, 2016). The goal is a 10% reduction in obesity in this age group by 2020 (Healthy People, 2016).

Childhood obesity increases the child's risk for both physiological and psychological health conditions in both childhood and later in adulthood. Immediate health risk include prediabetes and type 2 diabetes, hypertension, non-alcoholic fatty liver disease, gallstones, sleep apnea, and musculoskeletal problems (Centers for Disease Control and Prevention [CDC], 2015a; Ciocca, Ramonet, & Alvarez, 2016; Institute of Medicine, 2004; Serdaroglu et al., 2016). Obese children have higher rates of depression than their non-obese peers (Institute of Medicine, 2004). In addition, obese children are more likely to experience social isolation and bullying (World Health Organization, 2012). More than a third of obese seven-year-olds become obese adults (Ciocca et al., 2016). Research has shown that obese adults are at increased risk for chronic conditions including cardiovascular disease, diabetes, stroke, various cancers, and osteoarthritis which increase their lifetime healthcare costs (CDC, 2015a).

Research suggests that obesity is a result of the interplay between genetics and modifiable factors including dietary choices and physical activity behaviors. Although many genes have been identified in the development of obesity, dietary modifications and physical activity can reduce obesity development (Choquet & Meyre, 2011). Roman-Vinas et al. (2016) in a study of children aged nine to 11 years of age in the U.S. found that only approximately 25% of study participants achieved the amount of recommended 60 minutes of moderate to vigorous physical activity daily. In addition, the authors suggest that sedentary behaviors such as watching television and playing video games contribute to reduced physical activity (Roman-Vinas et al., 2016).

Obesity in Montana

Montana is the fourth largest state by area in the U.S., but it is ranked 44th in population with just over a million people (United States Census Bureau, 2017). Approximately 22% of its residents are under the age of 18 years old (United States Census Bureau, 2017). A little less than two-thirds of Montanan adults are overweight (37.3%) or obese (25.5%; CDC, 2016). Some 12.5% of 2- to 4-year olds who participate in the Montana Women, Infants, and Children program are obese; 15.8% are overweight (U.S. Department of Health and Human Services, 2014). A quarter of Montanan high school students are overweight (15%) or obese (10.3%; CDC, 2015c).

Socioeconomic status affects the rate of obesity. Rural and low-income have less access to reasonably priced fruits and vegetables which are often replaced by sugar-sweetened beverages or packaged foods that are more easily accessible (CDC, 2015a). Montana is rural and is ranked 26th in the nation for individuals living in poverty (United States Census Bureau,

2017).

Another identified contributing factor to the overweight/obesity statistics for Montanan youth is the lack of routine physical activity. Just under half of the high school respondents from Montana reported not doing at least 60 minutes of physical activity on five of seven days before taking the survey; 10.7% of which did not have at least one day of physical activity (CDC, 2015c).

None of the datasets reviewed for Montana provide specific information on Montana elementary- or middle-school aged children's weight status. It is well documented that physical activity is important in obesity prevention. Montana does require elementary school students participate in physical education, but it does not dictate a minimum amount of time of the physical education each week and does not provide any guidelines on what constitutes physical activity (The State of Obesity, 2018).

Data on the overweight/obesity rates of elementary school children is lacking. However, it is likely to fall somewhere between the rates for 2- to 4-year olds (28.3%) and high schoolers (25.3%) in Montana which would be above the national average of 17%. Healthy People 2020 based the 10% improvement goal for childhood obesity on the finding that 17.4% of children from 2005-2008 were considered obese (Healthy People, 2016).

Purpose

There is evidence that obesity prevention interventions targeting children are effective without causing adverse outcomes (Waters et al., 2011). Obesity interventions generally focus on the modifiable risk factors such as diet and exercise. A meta-analysis study by Wang et al. (2015) found school-only based interventions to target childhood obesity are effective. Waters et

al. (2011) suggest that schools integrate physical activity into their curricula, encourage more sessions of physical activity throughout the school week, and engage in physical activity each day. In addition, research has shown that physical activity programs that can be embedded in current practices and are not resource intensive are more likely to be maintained (Waters et al., 2011).

In addition to Healthy People's obesity objective for school-age children, there is also a physical activity objective to increase regularly scheduled elementary school recess in the U.S. (Healthy People, 2018). Recess is defined by the CDC as a period in the school day in which children are allowed to choose how they spend their time with their peers usually involving active play (CDC, 2018). Montana currently has no requirement for recess in elementary schools (The State of Obesity, 2018). However, additional recess time is not necessarily the answer. Gao, Chen, Huang, Stodden, and Xiang (2017) found that despite schools offering adequate recreational time in the form of recess and lunch time the recommended 60 minutes of moderate to vigorous physical activity (MVPA) was not achieved. MVPA was more likely to be achieved during structured physical activities such as formal physical education. Recess and physical education are encouraged to increase physical activity, but other programs have been proven beneficial as well (Potera, 2017).

The purpose of this Doctor of Nursing Practice (DNP) project was to determine if a structured activity program (i.e., The Daily Mile program) could be implemented in the first through third grade classrooms of two Montana schools. The Daily Mile program was initially implemented at one school in the United Kingdom in 2012 to promote physical activity in the classroom setting (The Daily Mile Foundation, n.d.). It has since grown to more than 1,500

schools in the United Kingdom.

The Daily Mile is a free program requiring minimal resources. The major resources to implement this program are time (15 minutes per school day) and space to carry out the physical activity. Teachers can choose when it fits best into their lesson plans each day or spontaneously as he or she deems necessary. There are no clothing changes, and it does not replace formal physical education classes. The main aim of the project was to increase physical activity of children during the school day using a program that compliments the teachers' curricula.

Study Question

The study question for this DNP project was: Is it feasible to implement The Daily Mile program in the first through third grade classes of two rural Montana schools? Feasibility studies are indicated for several reasons one of which is when there are few published studies about a specific intervention technique (Bowen et al., 2009). The Daily Mile program website offers several individual school case studies (The Daily Mile Foundation, n.d.). However, a search of PubMed using the search term of "The Daily Mile" only returned 13 results. Only six were published after 2012 when the program was created, and only five pertain to The Daily Mile program created in Scotland. One in German is about therapeutic hypothermia (Himmel, Desch, & Wolfrum, 2015). The articles available related to The Daily Mile program include a critique of The Daily Mile program, a protocol for a randomized control trial (RCT) studying the program, a quasi-experimental pilot study, brief summary about the program and research available or ongoing, and a qualitative study about factors that may affect implementation success (Breheny et al., 2018; Chesham et al., 2018; Fairhurst & Hotham, 2017; Hawkes, 2018; Ryde et al., 2018). Breheny et al. (2018) state their study, the RCT, is the first to look at the effectiveness and cost-

effectiveness of The Daily Mile on childhood obesity.

Feasibility studies seek to answer three types of questions: *Can it work? Does it work?* and/or *Will it work?* (Bowen et al., 2009). *Can it work?* looks to determine if there is some evidence that an intervention might work. The Daily Mile program works in thousands of schools in the United Kingdom and across western Europe (The Daily Mile Foundation, n.d.). *Does it work?* is generally answered by a RCT and is outside the scope of this DNP project.

This project sought to answer *Will it work?* at schools in Montana, U.S. The Daily Mile states "It is a profoundly simple but effective concept, which any primary or nursery school can implement completely free of charge and without the need for staff training" (The Daily Mile Foundation, n.d., paragraph 2 on About). This study evaluated whether the program's principles could be applied to schools several thousand miles from where the program was initiated.

THEORETICAL FRAMEWORK AND SYNTHESIS OF EVIDENCE

Conceptual Model

The aim of this DNP project was to incorporate The Daily Mile program into the daily teaching routine into the first through third grade classrooms at two Montana schools. Incorporating The Daily Mile required a conscious change to an already established lesson. Although research has shown that change is difficult to accomplish and maintain, the use of theoretical frameworks to provide guidance to the design and implementation of a DNP project increases the likelihood of successful implementation (White & Zaccagnini, 2017). One such theoretical model is in Keller's (1987) Model of Motivational Design (ARCS). ARCS (attention, relevance, confidence, and satisfaction) originated in education and provides a framework for developing instructional materials that appeal to the motivation of a learner (Keller, 1987).

Knowledge of health-promoting behaviors alone does not result in behavior change. Motivation is necessary to convert knowledge into action (Hardcastle et al., 2015). The four components of ARCS (attention, relevance, confidence, and satisfaction; Figure 1) must be addressed for motivation to occur (Keller, 1987). Attention captures an individual's focus and stimulates interest (Keller, 2010). Relevance is the belief that information is important to a person's goals or intentions (Keller, 2010). Even if attention and relevance are established, motivation may still be lacking until confidence, or the expectancy to succeed, is established (Keller, 2010). Motivation is established once attention, relevance, and confidence are garnered; however, motivation is not sustained unless satisfaction with the experience exists (Keller, 2010). Satisfaction is obtained from extrinsic and/or intrinsic sources.

FIGURE 1. Pictorial model of the components of the ARCS model that facilitate motivation.

Although ARCS was developed and continues to be widely utilized in educational instruction, it has been successfully used in nursing research to promote motivation and sustain change. ARCS has been used in studies evaluating education for a variety of healthcare

professionals including nurses, physicians, and pharmacists (Amaro, 2014; Wongwiwatthananukit & Popovich, 2000). Al-Tawfiq and Pittet (2013) adapted ARCS to improve hand hygiene in health care settings. ARCS has also been used in the healthcare setting with mothers to personalize their experience with breastfeeding (Stockdale, Sinclair, & Kernohan, 2014).

For this DNP project, the proposed change was inclusion of The Daily Mile program in first through third grade teachers' classrooms. The concepts of the ARCS model were applied to motivate teachers to implement the proposed physical activity program into their classes. The Daily Mile program needed to be presented (attention) to the potential adopters (teachers) in a way that explains why it is important and manageable (relevance & confidence). The Daily Mile program postulates that formal training is not necessary for teachers to implement in their classrooms. However, the program cannot be utilized without obtaining the attention of the teachers.

Relevance is defined by the program's value. The Daily Mile program was designed to target childhood obesity and physical fitness, but Michael, Merlo, Basch, Wentzel, and Wechsler (2015) identified multiple studies associating short activity breaks with additional classroom benefits, such as improved cognitive performance, on-task behavior, and higher standardized test scores.

Confidence is associated with the expectancy of success and can be increased with independence (Keller, 1987). The Daily Mile program can be scheduled into a teacher's lesson plan or can be flexibly utilized when a natural break in formal instruction occurs during the day. Each teacher can incorporate the program in a manner of his or her choosing.

Satisfaction is evaluated and is often linked to external and/or internal rewards (Keller, 1987). The research suggests an external reward for teachers may be better classroom behaviors of students leading to more productive instruction due to decreased behavioral interruptions (Michael et al., 2015). In The Daily Mile program, the teachers also participated in the 15-minutes of movement and may well discover some internal rewards to brief activity breaks contributing to the satisfaction of program implementation.

Concept Analysis

A concept analysis helps to explore the chosen phenomenon more fully (Moran & Burson, 2017). When defining concepts, it is important to avoid broad terms to make the concept more manageable to study (Moran & Burson, 2017).

Obesity

Obesity is defined based on body mass index (BMI) in children. Children with a BMI greater than or equal to the 85th percentile are defined as overweight; obese children have a BMI of greater than or equal to the 95th percentile (Bass & Eneli, 2015). If a child's BMI is greater than or equal to the 99th percentile, they are considered to have severe childhood obesity (Bass & Eneli, 2015).

Physical Activity

Physical activity is a modifiable risk factor for obesity. The recommendation is for children older than six years old to be active at least 60 minutes per day, and the 60 minutes may be broken into shorter blocks to still achieve benefits of physical activity (American Academy of Pediatrics [AAP], 2015). The activity should be moderate to vigorous. Physical activity intensity is different from individual to individual but can be evaluated by the "Sing, Talk, Gasp" test

(CDC, 2015b). During vigorous-intensity activity, one should not be able to say more than a few words before needing to take a breath. In contrast, moderate-intensity activity allows an individual to talk, but not sing.

Physical activity is broken into three main categories: aerobic, muscle-strengthening, or bone-strengthening (AAP, 2015; CDC, 2017). Children's recommended 60 minutes of physical activity should be comprised of a variety of activities from these categories. Some activities fall into more than one category. For example, running is both bone-strengthening and aerobic.

The Daily Mile Program

The Daily Mile Program is a teacher-directed program in which students run, jog, or walk, but must be moving for a 15-minute period during each school day (The Daily Mile Foundation, n.d.).

In the US public school system, *first graders* tend to be 6- to 7-years-old; *second graders* are usually 7- to 8-years-old; and, *third graders* are 8- to 9-years-old ("Year/grade placement," n.d.). Gross motor skills, or those involving larger movements of the arms, legs, feet, and core body, are mostly developed (Chiocca, 2015). The Daily Mile program requires a student to participate in 15-minutes of physical activity involving gross motor movements such as walking, jogging, or running.

Synthesis of Evidence

A literature search for evidence supporting the implementation of the physical activity program in by elementary schools was conducted in PubMed. The keywords used in the search process were pediatric obesity/prevention and control [MeSH], physical activity, and school. Limits were applied for full text availability, publication within the last five years, and for child

ages of six to 12 years old. This initial search yielded 343 articles which were reviewed for potential application to this DNP project which resulted in 54 articles. After reading the abstracts of these 54 articles, 10 articles were retained which specifically focused on evaluating stakeholders, school administrators and teachers, perceptions of implementing obesity programs in schools (n=5) and reviews evaluating the effectiveness of physical activity in children (n=2) and role of schools in obesity prevention and control (n=3; Appendix A).

Stakeholders

Five articles were found discussing stakeholders and implementation of obesity prevention programs in schools. Three were primary research studies: one mixed-method, one descriptive qualitative, and one descriptive quantitative (Blaine et al., 2017; Clarke, Pallan, Lancashire, & Adab, 2017; Turner, Slater, & Chaloupka, 2013). Two systematic reviews were included in the synthesis of evidence: one strictly qualitative and one quantitative and qualitative studies (Clarke, Fletcher, Lancashire, Pallan, & Adab, 2013; Langford, Bonell, Jones, & Campbell, 2015). Settings included the U.S. (n=2), United Kingdom (n=1), and studies from across the globe (n=2); Blaine et al., 2017; Clarke et al., 2013; Clarke et al., 2017; Langford et al., 2015; Turner et al., 2013). Stakeholders were defined as administrators in two articles (Clarke et al., 2017; Turner et al., 2013); as parents, students, and school staff in one article (Clarke et al., 2013); and, as school staff (i.e., administrators, teachers, & nurses) in the remaining two studies (Blaine et al., 2017; Langford et al., 2015).

Of the articles reviewed, stakeholders in all of the articles believed schools are an appropriate setting for obesity prevention and control programs (Blaine et al., 2017; Clarke et al., 2013; Clarke et al., 2017; Langford et al., 2015; Turner et al., 2013). Additionally, administrators

report student health, including more physical activity, positively impacts learning and behavior (Clarke et al., 2017; Turner et al., 2013). Two of the articles on stakeholders found that stakeholders are interested in helping students achieve more physical activity during the school day (Clarke et al., 2013; Turner et al., 2013).

Two of the articles reported that teachers, as the primary implementer of classroom-based programs, are receptive to childhood obesity prevention programs once they feel competent in executing the program components (Blaine et al., 2017; Langford et al., 2015). Two of the articles suggest that interventions that align with the teachers' goals and allow teacher participation are recommended (Clarke et al., 2013; Langford et al., 2015).

Four studies identified multiple barriers to implementation of programs in the school setting. The first barrier identified was that the focus of schools is meeting academic standards not evaluating physical performance and reluctance to take time away from educational instruction (Blaine et al., 2017; Clarke et al., 2013; Clarke et al., 2017). A second barrier reported is the perceived lack of support either in funding or administrative resources (Clarke et al., 2013; Langford et al., 2015). One study reported teacher absences or rapid turnover rate as a barrier to program implementation, but it did not define either (Langford et al., 2015).

Role of School and Physical Activity

Five reviews relating to the role of schools and physical activity interventions in school-settings in prevention of childhood obesity were evaluated. Three of these reviews were systematic reviews with meta-analysis (Kelley & Kelley, 2013; Sobol-Goldberg, Rabinowitz, & Gross, 2013; Wang et al., 2015). One review was a narrative review (Baranowski et al., 2014); the other was a critical review (Shirley et al., 2015).

Conflicting evidence was garnered in the five articles on the role of school and physical activity. One article reported that exercise has a positive effect on the percentage of body fat of children and adolescents who are overweight or obese (Kelley & Kelley, 2013). Baranowski et al. (2014) reported that activity is greater for children in the summer and less in the winter when schools are in session which conflicts with their finding that obese and overweight children gained weight during the summer but lost weight during the school year.

Two articles specifically found that school-based obesity prevention programs were effective in reducing obesity in children (Sobol-Goldberg et al., 2013; Wang et al., 2015). In addition, Sobol-Goldberg et al. (2013) found school-based programs were significantly more effective for children age 5-12 than adolescents. The studies show that there are several types of interventions used in school-based programs including single or combination intervention (Shirley et al., 2015; Sobol-Goldberg et al., 2013; Wang et al., 2015). Single interventions included education, diet, or physical activity components alone; whereas combination interventions utilized a blend of single intervention strategies. Most (65% to 94%) of the school-based programs included in the reviews had combination interventions, which show the greatest effect on obesity prevention and control (Shirley et al., 2015; Sobol-Goldberg et al., 2013; Wang et al., 2015). Wang et al. (2015) found school-based physical activity-only interventions to have moderate efficacy in prevention and control of childhood obesity. However, Shirley et al. (2015) report that single-intervention programs did not effectively reduce BMI in their review of programs set in the U.S. with elementary school-age children.

Major Findings

Based on this evidence review, there are few published studies on the implementation of physical activity programs in elementary schools. Weaknesses for this synthesis are varied. Theoretical frameworks were not identified for 90% of the articles. The majority of the evidence included in synthesis of stakeholders' perceptions are level V and VI according to the evidence hierarchy (Polit & Beck, 2012). Settings are global and do not directly evaluate rural Montana school populations. A major gap in the literature is a lack of studies evaluating the effectiveness or stakeholder perceptions of The Daily Mile program.

Despite these identified weaknesses, findings from this evidence review support school-based physical activity interventions. Three of the articles (Kelley & Kelley, 2013; Sobol-Goldberg et al., 2013; Wang et al., 2015) used to evaluate the effectiveness of physical activity in children and role school play in childhood obesity prevention and control met the definition of level I evidence, or the strongest level of evidence, according to the evidence hierarchy (Polit & Beck, 2012). The Daily Mile meets the suggestion that programs include teacher participation. Additionally, the program can align with teachers' goals because the teacher sets when the 15-minute physical activity fits into the school day. A potential barrier identified in this evidence review for this DNP project to address during implementation is time taken away from academic instruction. While the studies found evaluating stakeholder perceptions are limited in number, this evidence review identified strong stakeholder support for programs addressing childhood obesity in schools.

METHODS

Design

The project design was a multisite program evaluation of the implementation of The Daily Mile program. The Daily Mile is a free program that consists of a 15-minute, teacher-led, non-competitive jog or walk that takes place each school day. It has been successfully implemented in more than 3,300 schools worldwide with the majority of schools being in the United Kingdom (The Daily Mile Foundation, n.d.). In the U.S., The Daily Mile has been implemented in less than 50 schools.

Setting

The settings for this DNP project were two schools located in north central Montana. The schools are in neighboring school districts located less than 35 miles apart (approximately 33 driving minutes).

Participants

This DNP project utilized a convenience sample of administrators and first through third grade teachers at both schools as participants for this study. Developmental considerations encouraged the selection of first through third grade classrooms. School-aged children have mastery of gross motor skills that are necessary to run and are eager to try new things (University of Illinois Extension, 2018; Yousey, 2017) . Younger school-aged children do not require clothing changes after physical activity thus decreasing the amount of time that needs to be allotted to physical activity (The Daily Mile Foundation, n.d.). Participation in the study was voluntary and did not impact the teachers' or administrators' job evaluations.

Intervention

The intervention for this DNP project was implementation of The Daily Mile in the classroom setting. As the first step of implementation of The Daily Mile, the classroom teachers and school administrators were sent two PowerPoint presentations in August prior to the start of the 2018-2019 school year to allow the participants planning time for the implementation (Appendix B & C). The first PowerPoint was a short presentation designed to provide a brief introduction to the problem of childhood obesity and The Daily Mile program. The second PowerPoint was a voiceover presentation discussing the project, expectations of the teachers, project timeline, and contact information. Also, this author, as the primary investigator, offered to set up a video conference to answer any questions after viewing the PowerPoint presentations to increase teachers' confidence in implementing The Daily Mile program in their classrooms. This writer was available by email to all participants.

Additionally, a letter was drafted and approved by the school administrators (Appendix D). This letter was distributed to the students' homes explaining the addition of The Daily Mile program to the classrooms. It was a disclosure letter notifying the family of the implementation of The Daily Mile program at their school. The letter was dispersed by each school in the manner that fit with its usual parent-school communication routine.

During the first weeks of the school year, the teachers and administrators developed a route for their school in which the students and teachers can complete The Daily Mile laps. The route risk assessment tool available on The Daily Mile's website was sent to each school to verify the safety of the route and identify any potential risks.

The Daily Mile program was implemented in the classrooms from September 1 through

October 31. Teachers monitored time and determined when the 15-minute jog/run was completed. A daily intervention log was completed by each teacher. This writer sent emails to teacher participants and copied administrators three times during the intervention period to offer encouragement during the incorporation of The Daily Mile program into their daily classroom activities.

Tools for Data Collection

Data was collected from the daily logs completed by each teacher and two teacher-completed follow-up surveys (Appendix E, F, & G). The daily log was a basic tracking system including whether or not The Daily Mile took place that day. If the program was not done, checkboxes identifying potential barriers were available such as weather, time, or other.

Survey data was obtained via Qualtrics Survey Software available online to University of Arizona students free of charge. The first survey included demographic data and Likert scale questions regarding the implementation of The Daily Mile. The teacher participants were sent a link directly from the Qualtrics site in early November. Demographic data included teachers' ages, years in teaching, and years at current school. Interventional data questions focused on the four main components of the identified ARCS framework in relationship to The Daily Mile intervention and were derived from statements presented on The Daily Mile website.

A second survey was sent to the teachers in December to evaluate if The Daily Mile program was sustained past the implementation period. A third survey was sent to school administrators evaluating the resources required to complete the program (Appendix H).

Ethical Considerations

The Belmont Report published in 1979 by the Department of Health, Education, and Welfare outlined three ethical principles to be considered when studying human subjects (Ryan et al., 1979). These principles are respect for persons, beneficence, and justice.

Respect for Persons

Respect for persons mandates that individuals be treated as autonomous agents (Ryan et al., 1979). Participation in the study was voluntary. Potential participants were given full disclosure of study expectations and had ample opportunities to get questions and/or concerns addressed prior to partaking. Additionally, participants were notified that consent to participate in the study may be withdrawn at any time without professional or personal repercussions. These respect principles were shared with each participant prior to participation in the study in a primary disclosure statement (Appendix I). Respect was shown to study participants at all times and no identifying data was utilized as results.

Beneficence

"Do no harm" is a long-standing, essential principle of medical ethics (Ryan et al., 1979). Beneficence is an obligation to maximize benefits while minimizing potential harms (Ryan et al., 1979). Beneficence was maintained in this study by verifying The Daily Mile program was implemented in a safe environment. This program has been safely implemented in multiple educational institutions.

Justice

Justice is the principle that individuals ought to be treated with fairness and equally (Ryan et al., 1979). Study participants were first through third grade teachers and included

regardless of teaching experience. Each was provided the same interventional instruction, and support was given according to his or her individual needs.

Study Approval

The University of Arizona College of Nursing Departmental Review Committee, The University of Arizona Institutional Review Board (Appendix J), and the schools' Boards of Trustees approved the study prior to any interventional implementation or data collection taking place. Additionally, this writer obtained written approval from The Daily Mile Foundation to utilize its program in this DNP project (Appendix K).

RESULTS

Data Analysis

Descriptive statistics were utilized in the data analysis of this DNP project. Descriptive statistics allow groups of like data to be summarized adding meaning to the results (Kellar & Kelvin, 2013). Each Likert scale survey question of the study has been summarized using descriptive statistics. Measures of central tendency (i.e., mean, median, and mode) are key understandings gained in the use of descriptive statistics (Kellar & Kelvin, 2013). It is often easier to make more sense of study variables when presented to readers using descriptive statistics than tables of raw data points (Kellar & Kelvin, 2013).

Daily logs were reviewed for completeness and helped identify how often The Daily Mile program was utilized by the individual classroom teachers and as a group. Additionally, the daily log "Notes" section was transcribed. This qualitative data was combined with answers obtained from the open-ended survey questions and email communication to this writer. This data was reviewed for emergence of themes using basic thematic analysis.

Outcomes

Demographics

Each school had one first-, one second-, and one third-grade class. All six teachers participated in various aspects of the project. The two schools had three administrators eligible for participation. The teachers had anywhere between one to five years teaching experience to teaching for more than 20 years. Additionally, they had been at their current schools either one, two, or more than five years. Individual class sizes varied in range (10 to 21 students). Table 1 shows the demographic data for the individual schools. No demographic data was obtained on the administrators' survey.

TABLE 1. *Teacher demographics.*

	School					
	1		**2**			
Characteristic	**(n=3)**	**(%)**	**(n=3)**	**(%)**	**Total [n=6, (%)]**	
Years in teaching						
1-5 years	2	(67)	0	(0)	**2**	**(33)**
6-10 years	0	(0)	1	(33)	**1**	**(17)**
11-15 years	0	(0)	0	(0)	**0**	**(0)**
16-20 years	1	(33)	0	(0)	**1**	**(17)**
>20 years	0	(0)	2	(67)	**2**	**(33)**
Years at this school						
1 year	1	(33)	1	(33)	**2**	**(33)**
2 years	2	(67)	0	(0)	**2**	**(33)**
3 years	0	(0)	0	(0)	**0**	**(0)**
4 years	0	(0)	0	(0)	**0**	**(0)**
5 or more years	0	(0)	2	(67)	**2**	**(33)**
Total number of students (1st thru 3rd grades)	45		38		**83**	

Survey Program Evaluation

Teachers. The six teachers participated in the initial survey sent in early November after the implementation period ended. All (n=6) responded "yes" to the question asking if they planned to continue the program in their classrooms. Table 2 shows the teachers' responses to the Likert survey questions broken down by school. The combined responses are displayed in

Figure 2 in addition to illustrating how strongly a response was disagreed or agreed with from left to right respectively. Figure 3 shares the Likert scale averages for each statement for individual schools as well as the combined average of both schools.

Four of six teachers participated in the follow-up survey sent in mid-December. The follow-up survey had two parts. The results to the first part (*Since completion of the study, I have used The Daily Mile program an average of ____ per week.*) are present in Table 3. The second part of the survey was an open-ended question asking about factors that contributed to continuing or discontinuing the program in their classrooms. These responses were combined with the other qualitative data from the study and are reported below.

TABLE 2. *Initial teacher survey results.*

	Strongly disagree		**Somewhat disagree**		**Neither agree nor disagree**		**Somewhat agree**		**Strongly agree**	
	School (n=3, n=3)									
Statements	**1**	**2**	**1**	**2**	**1**	**2**	**1**	**2**	**1**	**2**
I did not know the severity of the childhood obesity problem prior to participation in this project.	0	2	1	1	0	0	2	0	0	0
Schools can play an important part in obesity prevention.	0	0	0	0	0	0	2	1	1	2
The Daily Mile program in schools addresses one dimension of obesity in children.	0	0	0	0	1	1	0	1	2	1
I found it easy to incorporate 15-minutes of physical activity into my lesson plans each day.	0	0	1	0	0	0	1	3	1	0
The majority of students looked forward to their Daily Mile each day.	0	0	0	0	0	0	1	2	2	1
I was able to include all students in The Daily Mile.	0	0	0	0	0	0	0	0	3	3
I benefited from participated along with my students.	0	0	0	0	0	0	0	0	3	3

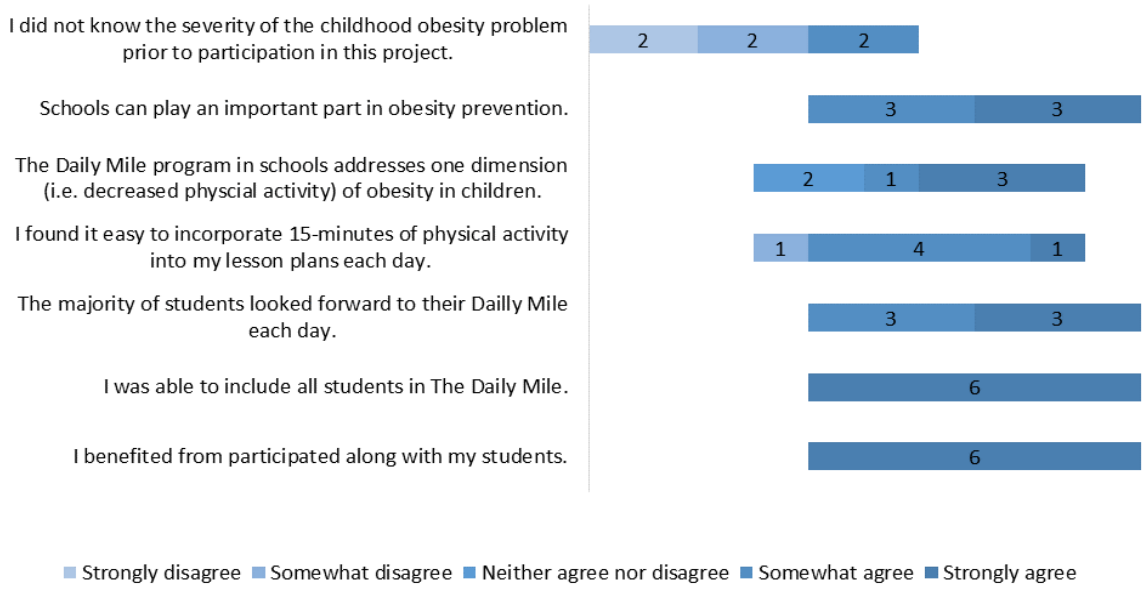


FIGURE 2. Diverging stacked bar chart of combined survey results from both schools. (Numbers represent number of total teachers with particular response. Bar placement corresponds to how stongly the participants disagreed (left) or agreed (right) with the statement.)

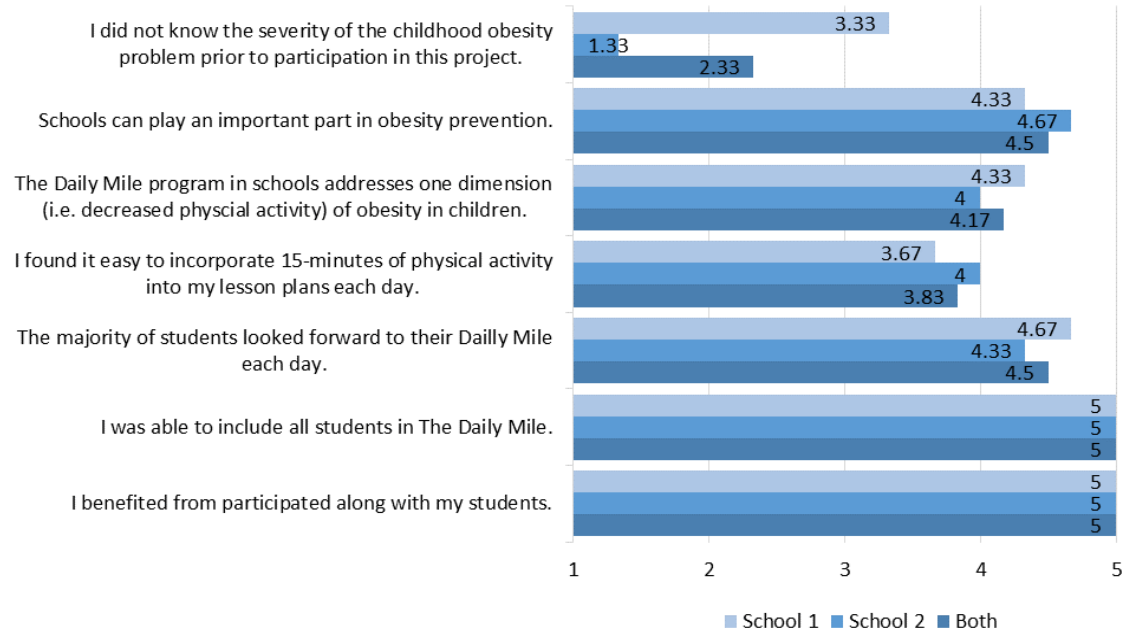


FIGURE 3. Bar chart representing the *average* Likert survey score for each response for the schools individually and combined. (The number is the calculated average score with 1—Strongly disagree and 5—Strongly agree.)

TABLE 3. *Follow-up teacher survey results.*

	School		
	1 (n=2)	**2 (n=2)**	**Total (n=4)**
0 days	1	0	**1**
1 day	0	1	**1**
2 days	1	0	**1**
3 days	0	1	**1**
4 days	0	0	**0**
5 days	0	0	**0**

Note. Teachers responded to this statement: Since completion of the study, I have used The Daily Mile program an average of ____ per week.

Administrators. Two of the three administrators participated in the administrator survey evaluating the role of schools in obesity prevention, resources needed to have The Daily Mile program, and wish to see the program continue in his or her school. The results are shown in Table 4 along with Likert score averages (Strongly disagree=1; Strongly agree=5)

TABLE 4. *Administrator survey results.*

Statements	**Strongly disagree**	**Somewhat disagree**	**Neither agree nor disagree**	**Somewhat agree**	**Strongly agree**	**Average Likert Score**
Elementary schools can play a role in obesity prevention.	0	0	0	0	2	**5**
The resources necessary to implement The Daily Mile program are reasonable.	0	0	0	0	2	**5**
I would like to see The Daily Mile continue in my school.	0	0	0	1	1	**4.5**

Daily Logs

A file with the daily log was sent to each teacher to be printed and completed for each school day during the implementation period. One teacher commented:

> *We LOVE the logs as they are super simple and not time consuming! Things like that make a huge difference!* (personal communication, August 28, 2018).

Six teacher daily logs were scanned and emailed to this investigator by the individual schools. The logs were reviewed for completeness (date, box mark indicating whether program done or

not, and reason given if not; Table 5). One school has school five days per week except during holiday weeks as appropriate (School 1); the other has four-day school weeks (School 2). Schools were not in session on Labor Day (September 3, 2018) and for a statewide teacher convention (October 18-19, 2018). Two teachers (Teacher 2 & Teacher 4) had a completed log for each school day during the implementation period (September 1 through October 31). The log for Teacher 1 had some dates typed on two pages without additional information. This writer confirmed with the person that scanned the logs that it was only two pages and no pages were missing. It is unknown if this teacher utilized The Daily Mile program in his or her classroom. Teacher 3 was missing one week (three days) from his or her log. Teacher 5 had four weeks of blank log pages for a total of 15 school days.

Teacher 6 attempted to have each student complete a log individually in addition to his or her log. Seventeen consecutive school days (September 4 through October 1) are documented in all the logs from that classroom with no data available after October 1. Teacher 6 shared:

> *My kids and I were very faithful to the Daily Mile and have continued it since the end of the program's cycle. My problem was it was very difficult to keep track of the kids' logs on top of everything else. I must say I was overwhelmed. My logs are incomplete so for that, I must apologize* (personal communication, November 8, 2018).

Three reasons were selected for why the program could not be completed on a given day. Other was selected 19 times. Details included parent letter not sent home (n=6), having substitute teachers (n=10), and behavior teaching (i.e., still getting used to school routines; n=2). Teacher 3 had substitute teachers for 10 consecutive school days during the implementation period.

> *I was gone on a trip this week. I gave the sub(s) [They had 4 different ones! Yikes!] the option to do Daily Mile or not as I didn't want to overwork them with more than they could handle. I don't believe it got completed. My kids were bummed about that!* (daily log)

> *Again, I was still gone on my trip! Luckily they had a steady sub this week, but I don't believe daily mile got completed due to my absence! Again, my students were bummed they were missing it!* (daily log)

The next most common reason chosen was time constraint (n=16). Teachers shared that time constraint occurred primarily due to schedule changes and/or scheduled school activities (e.g., pep assembly, holiday parties, homecoming activities, etc.). Weather was the least common (n=4) reason selected.

The core principles available on The Daily Mile Foundations webpage were updated during this project. The principles shared with teachers can be seen in Appendix C. The EVERY DAY principle was changed to WHEN TO GO (The Daily Mile Foundation, n.d.). It is now suggested that The Daily Mile take place at least three days per week or 60% of the school days assuming a five-day school week is typical. Teachers 2-6 almost reached that 60% (59%). Average days per week for individual teachers can be found in Table 5. Teacher 2 and Teacher 4, who had completed daily logs, achieved slightly more than the program recommended three days per week (3.38 & 3.41 days/week respectively).

TABLE 5. *Daily logs.*

	Teacher						
	1	**2**	**3**	**4**	**5**	**6**	**Totals**
School days in the implementation period	40	40	40	34	34	34	**222**
Number of school weeks	8	8	8	8.5	8.5	8.5	**49.5**
Number of days **completed**	0	27	18	29	17	17	**108**
Number of days **not completed**	0	13	19	5	2	0	**39**
Number of days with **no data entry** on log	40	0	3	0	15	17	**75**
% of school days program completed	0%	68%	45%	85%	50%	50%	**49%**
Average days per week	0	3.38	2.25	3.41	2.00	2.00	**2.18**
% of school days program completed adjusted for number of days log completed	n/a	68%	49%	85%	89%	100%	**73%**
Adjusted average days per week	n/a	3.38	2.43	3.41	3.58	4.00	**2.94**

Notes. Teachers assigned number randomly. Not in the order of grade taught. Teachers 1-3 are at the same school, as are Teachers 4-6.

Qualitative Data

Three main themes emerged from the thematic analysis of the qualitative data obtained throughout the study from four sources: emails, daily logs, and teacher surveys. Eleven emails from four teachers were included. The daily log pages had 17 comments from three teachers. The teacher surveys had eight remarks (four on the initial survey; four on follow-up survey) for review.

Program support. Comments and written feedback were overwhelmingly supportive of The Daily Mile program. Words such as love (n=13), great (n=7), enjoy (n=5), and fun (n=4) were used. Additionally, 38 exclamation marks were utilized by the teachers.

> *We continued it because the students loved it and requested that we continue. I also enjoyed it because it gave us another opportunity to informally visit with each other as we walked or jogged.* (follow-up teacher survey)
>
> *What a great program! We love it and will continue as often as we can!* (daily log)
>
> *This was such a fun activity and the kids loved it!* (daily log)

One teacher did email to find out if an alternate physical activity in the classroom would be appropriate because he or she just could not tolerate the cold outdoor temperatures.

Teacher feedback about students' program participation. Teachers reported students really liked doing The Daily Mile and were "bummed" when it was not able to be done on a given day.

> *…the students love it as a brain/bum break from constant learning!* (daily log)
>
> *They were bummed but we had a lock down drill as well so ran out of time.* (daily log)
>
> *They were not happy when we didn't do the Daily Mile on Thursday!* (daily log)

Additionally, a teacher noticed positive behavior changes for some students.

> *Many of my students with behavior problems looked forward to the daily mile. It served as a great outlet for them to release some of their energy and potential frustrations from the day.* (initial teacher survey)

The teachers reported the students really challenged themselves and improvement was seen over the course of the implementation period. However, no indication was given on how the improvement was measured or what was seen specifically.

> *It was a great opportunity for the students to challenge themselves! They enjoyed lapping me [teacher] around the track!* (initial teacher survey)

> *We would challenge ourselves and we improved from the beginning of the project to the end.* (initial teacher survey)

> *I have <u>really</u> seen a difference in how much better the kids have gotten. We got a new student on Monday and he really had to work to keep up! The others tried extra hard to impress him!* (daily log)

Barriers. Barriers identified in the comments/responses mirrored those seen as reasons The Daily Mile was not completed from the daily logs: weather and time constraints. Three of the four responses from the follow-up teacher survey shared time and weather as affecting the number days the program was able to continue after the implementation period.

> *The weather has been the biggest factor in stopping the program. It takes my students an extra 5-10 minutes to dress for the colder weather, which ends up taking away approximately 25 minutes of instructional time.* (follow-up teacher survey)

Three comments were made on the daily logs about the weather, but that The Daily Mile was still being done despite the cooler temperatures with some rain.

> *It was chilly and a bit wet this week but we still did our time!* (daily log)

> *Our weather has started to go toward the chilly side. Some rain spitting at times! The track wasn't muddy though, so we went out when we could find time!* (daily log)

> *Getting a bit chilly w/ fall weather, but still tolerable!* (daily log)

DISCUSSION

Relationship of Results

Framework

The framework chosen to guide this project was Keller's Model of Motivation Design, or ARCS. This project required a practice change from teachers as they incorporated a physical activity program into their daily teaching routines. ARCS states that motivation to change occurs if attention, relevance, and confidence are obtained, and satisfaction with the change depends on intrinsic and extrinsic rewards (Keller, 2010). The Likert initial teacher survey questions were designed to evaluate The Daily Mile program using statements from The Daily Mile Foundation's webpage and were guided by the ARCS model.

The two PowerPoint presentations brought two items to the teachers' attention: severity of childhood obesity epidemic in the U.S. and The Daily Mile program created in the United Kingdom. According to the survey results, two-thirds of the teachers in this study felt they knew childhood obesity was a severe problem before the project started. But knowing about the problem is not enough to motivate to make a change (Keller, 1987).

Two initial teacher survey statements evaluated program relevance, or the program's value. All teachers (n=6) agreed that schools can play a role in childhood obesity prevention. While no teacher disagreed that The Daily Mile program addresses one dimension of obesity, only four (67%) agreed with two indifferent.

Confidence, or the expectancy to succeed, is enhanced by independence (Keller, 1987). The majority (n=5, 83%) of the teachers found it easy to incorporate the recommended 15-minutes of physical activity into their lesson plans; one disagreed. Overall, The Daily Mile

program meets the requirements for motivation to occur. However, motivation alone is not enough to sustain a program.

Satisfaction with the program was evaluated with three Likert scale statements and a question evaluating the plan to continue its use. All teachers (n=6) agreed that students looked forward to The Daily Mile each day. All strongly agreed that they were able to include all students in the program and that they too benefited from participation. Additionally, all teachers expressed plans to continue the program past the implementation period. However, perhaps the best evaluation of program satisfaction can be seen from the written feedback provided which was overwhelmingly positive.

Other Evidence

This DNP project evaluated two types of stakeholders: teachers and administrators. Evidence supports school-based activity programs from a stakeholder perspective (Blaine et al., 2017; Clarke et al., 2013; Clarke et al., 2017; Langford et al., 2015; Turner et al., 2013). This study found similar results through the agreement of two school administrators to allow implementation of the program and teacher participation in all six selected classrooms.

Teachers are often the primary implementer of school-based activity programs and as such need support to feel competent in instilling the program in their classrooms (Blaine et al., 2017; Langford et al., 2015). In this study, the teachers had to implement the program per the core guidelines with guidance from the primary investigator. Few questions were asked after the initial presentations had been delivered indicating The Daily Mile program requires little instruction to successfully implement.

Every practice change has the chance to be met with barriers. Time away from instruction, lack of administrative or funding support, and teacher absences are all reported in the evidence (Blaine et al., 2017; Clarke et al., 2013; Clarke et al., 2017; Langford et al., 2015). This study found similar results with the exception of administrative and funding support. Time constraint was reported as the reason the program could not be completed as 41% (16 days of 39) of the time. Additionally, one teacher's classroom missed 10 consecutive days due to his or her absence necessitating the use of multiple substitute teachers. Both administrator participants expressed a wish to see The Daily Mile program continue in their schools and reported the minimal resources necessary to implement the program are reasonable.

The evidence is mixed on the effectiveness of school-based activity programs on obesity (Baranowski et al., 2014; Kelley & Kelley, 2013; Shirley et al., 2015; Sobol-Goldberg et al., 2013; Wang et al., 2015). The Daily Mile program is a single intervention, physical activity only, program. These types of programs have been shown to have moderate efficacy in addressing childhood obesity (Wang et al., 2015). This study did not evaluate any outcomes directly related to children's BMIs. However, other outcomes such as changes in behavior and physical fitness were reported by the teachers.

Study Aims

The purpose of this DNP project was to determine if The Daily Mile program could be implemented into the teaching routines in the classroom of first- through third-grade students at two schools in Montana in order to answer the question about feasibility of applying this program. It sought to answer a *Will it work?* type of feasibility question. According to the daily

logs, it worked approximately 49% of the school days; yet, 33% of total school days had no information available from the logs.

Teachers 2 and 4 submitted complete logs which reflected the two highest percentages of program utilization during the implementation period. Additionally, Teacher 6 reported implementing The Daily Mile program for 17 consecutive school days on his or her daily logs resulting in a 100% completion percentage for the first 17 days of the implementation period. However, no log data was available for the second half of the implementation period so the final calculated percentage for that classroom was only 50%. Therefore, it is possible the percentage of days The Daily Mile was utilized during the implementation period was actually higher, but this is not reflected on the daily logs. The Daily Mile Foundation states “Keep it simple. Resist the temptation to over complicate it.” (The Daily Mile Foundation, n.d., Core Principles #10). It is possible the study requirement asking the teachers to keep the daily log over complicated the program despite attempting to make the tool simple and user-friendly.

Each school had a different rate of implementation (37% of days [School 1] versus 61% [School 2]). This difference may be attributed to multiple factors. School 2’s teachers had overall more teaching experience as well as longer employment at their school. It is unknown what effect this may have had on the study. Additionally, each school is a system/culture of its own which may affect the response to inclusion of the program.

Impact of Results on Practice

This project was the first of its kind for this writer. While the majority of the project went smoothly, the lack of completed daily logs impacted the study. The daily logs are not part of the core principles of The Daily Mile program; however, they do offer quantitative program data:

how often the program is completed and barriers to completion. In this study, one teacher did not input any data on his or her daily log; another attempted to have each student complete one and subsequently only submitted data for the first half of the implementation period. Emails of support were sent to all the participants at regular intervals throughout the implementation period. In addition to these emails, this writer would suggest a more personal follow-up via the communication preference (i.e., video conferencing, email, phone call, etc.) of the participant's choice at two weeks into the implementation period. This may allow for any barriers to completing the log be addressed and allows the investigator to assess how the program is going for the individual and his or her classroom.

The Daily Mile Foundation has outline 10 principles for implementing its program (Appendix C). One states to use the weather as a benefit and not a barrier. It was found in this project that weather was a barrier to continuing the program despite the teachers' intentions to do so. This writer suggests schools develop two routes in areas with extreme weather, either too hot or too cold, for multiple days to weeks in a row. The primary, outdoor route should be utilized as often as appropriate in keeping with the programs original principles. An alternate, indoor route or space to be used when the teacher determines the weather is a barrier resulting in either unsafe conditions such as extreme heat or conditions that would require too much additional time to properly be safe in such as when extra gear is necessary for snowy, cold days. The goal of having two routes would be to increase the number of days the program takes place for each classroom, and the route the teacher uses left to his or her discretion thus providing even more flexibility of the program.

Teachers and schools should not be shouldering the prevention and treatment of pediatric obesity alone. As a future pediatric primary care nurse practitioner likely in a clinic setting, this writer will be having sometimes difficult conversations with families and patients about weight, obesity, and prevention given the prevalence of childhood obesity. The core principles outlined by The Daily Mile program provide basic starting guidelines (Appendix C), and this writer would willingly recommend them to families as a framework to begin being active together. Again, it may be necessary to develop an alternate physical activity if the weather prevents going outdoors. This could be anything that requires movement for 15 minutes such as an impromptu dance party.

Sustainability

In a video conferencing call with persons at The Daily Mile Foundation in October 2017, this writer was told that they often see that the program is sustained in a school if it is completed for six to eight weeks. The implementation of this project was at least eight school weeks in each school. However, the program was not well sustained at both schools. The Daily Mile Foundation currently recommends the program be utilized a minimum of three days per week (The Daily Mile Foundation, n.d.). Of the four teachers that participated in the follow-up survey only one reported meeting this recommendation on average past the implementation period.

One reason this project had different sustainability results than what The Daily Mile Foundation has experienced may be related to greater variance of outdoor temperatures. The program was created in Stirling, Scotland (Chesham et al., 2018). In Stirling, the average low temperatures in November and December (the period evaluated in the follow-up survey) are 37 and 31 degrees respectively (Time and Date AS, 2019b). The average high temperatures are

reportedly 49 and 43 degrees. The nearest Montana city with similar data available is Great Falls. Its average lows for November and December are 25 and 18 degrees with average high temperatures 45 and 37 degrees respectively (Time and Date AS, 2019a). The below freezing temperatures may affect the ability to complete The Daily Mile outdoors. Sustainability may have been reported higher if the project's implementation period were the months of February and March with follow-up evaluation period of April and May when outdoor temperatures in Montana are warmer.

Strengths and Limitations

This project was founded in evidence and guided by a theoretical framework. While The Daily Mile itself has not been well studied, there is overwhelming evidence that physical activity is important in the prevention and treatment of obesity, and physical activity programs implemented in elementary schools have been found beneficial. A theoretical framework provides guidance in the design and implementation of a DNP project. Additionally, this project is an example of how a DNP project can be completed remotely through the use of technological programs. It was completed solely with the use of technology for communication, education, and evaluation as this writer never had in-person contact with any of the participants.

Use of evidence and theoretical frameworks increase the strength of this project; however, several limitations exist as well. First, the participation sample size was small as was the implementation time frame. The small sample size affected data collection and evaluation. The daily logs had 75 days (33.8%) without any recorded information. Also, only two-thirds of the follow-up teacher and administrator surveys were returned. Sustainability was evaluated with a self-reported average which may or may not be fully accurate.

Dissemination and Implications for Future Research and Practice

Dissemination of research or practice projects results is the sharing of final, and most important, step (Tymkow, 2017). Results from these activities help inform future research and evidence-base practice. This completed DNP project will be shared with The Daily Mile Foundation and the two site schools.

The Daily Mile program and its impacts on children and childhood obesity have not been fully studied or reported in the literature. The small studies that have evaluated The Daily Mile report positive improvements in body composition, metabolism, and increasing MVPA and decreasing daily sedentary behaviors in addition to being easy to implement and sustain in the school setting (Chesham et al., 2018; Ryde et al., 2018). Stronger studies, such as the RCT being conducted by Breheny et al. (2018), are necessary to help validate the results found in smaller less rigorous studies.

All three of the studies mentioned in the previous paragraph take place in the United Kingdom. It is important to evaluate different climates on The Daily Mile program implementation ability. As seen in this project, weather, especially with the need for additional protective gear and additional time to don such gear, was a main factor in not continuing the program past the implementation period for several teachers. This was due to cold weather, but extreme heat may affect the sustainability of The Daily Mile program in schools as well.

Despite the need for further evaluation and validation of the program, this writer would still recommend The Daily Mile to schools wishing to try it. There is large quantities of evidence supporting physical activity in the prevention and treatment of obesity. Fairhurst and Hotham (2017) offer criticism of The Daily Mile program stating it does not appropriately address

children's physical fitness needs. While the recommendation is 60 minutes of MVPA per day, this can be achieved in blocks and still be effective. The Daily Mile's 15-minutes of jog/run helps children toward their 60-minute goal. Additionally, Chesham et al. (2018) found children that participated in The Daily Mile program had an increase in MVPA and decreased sedentary behavior daily.

A second criticism of The Daily Mile program made by Fairhurst and Hotham (2017) is that it fails to provide children with physical activity that they want. They state that children are interested "in physical activity-based play and a strong belief in its value, with the main reasons for positive attitudes toward physical activity identified as fun and enjoyment, being with friends, and the sense of belonging to a team" (Fairhurst & Hotham, 2017, p. 83). Numerous case reports are available on The Daily Mile Foundation's webpage, and comments shared with this investigator during the course of this study overwhelming express the children's support of the program due to its inclusive and social nature. Research exploring the students' perspectives of The Daily Mile program could offer valuable insight into why teachers reported students being disappointed on day the program did not take place. For example, answering questions such as what aspects of the program are important to the students and how can those be maintained if modifications are necessary due to weather?

The Daily Mile program was designed to be utilized in the school setting. However, the program's core principles are straight-forward enough for even families to follow (Appendix C). Additional, research studies investigating the use of The Daily Mile program in families are needed to determine its' impact on obesity prevention or treatment and the family system as a whole.

Project Alignment with DNP Essentials

The curriculum of a DNP program is guided by *The Essentials of Doctoral Education for Advanced Nursing Practice* (American Association of Colleges of Nursing [AACN], 2006). It outlines eight elements that are the foundation of the DNP degree. This DNP project aligns with six of the identified essentials. DNP Essential I is titled Scientific Underpinnings for Practice. Nursing practice is informed by various sciences and theories, not just nursing ones. The grade levels to include in this project were chosen based on developmental and physiological knowledge. Additionally, ARCS, a model utilized widely in education, provided the theoretical framework for this project.

The second DNP Essential is Organizational and Systems Leadership for Quality Improvement and Systems Thinking. DNP graduates are expected to be competent in organization and systems leadership in order to improve patient outcomes at the individual or population level (AACN, 2006). In this project, this writer led a program implementation using sensitivity to organizational cultures at two schools. Additionally, the knowledge of systems informed the creation of the daily log tool to result in the least amount of disruption to the teachers' daily routine as possible.

DNP graduates are expected to be leaders in evidence-based practice (AACN, 2006). This requires the DNP to translate research into practice. DNP Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice provides an outline of this important element. The evidence was reviewed and synthesized before implementing this physical activity program.

Essential IV: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care identifies the importance of DNP graduates understanding how and using technology to monitor patient care, to evaluate programs, and to provide education (AACN, 2006). This DNP project was facilitated remotely through the use of several forms of technology. Video conferencing, email and PowerPoint presentations allowed this writer to obtain necessary permissions and provide project education. Data collection was obtained via Qualtrics Survey Software and scanned and emailed daily logs.

Improvements in healthcare often require the unique contributions from multiple professions (AACN, 2006). This is recognized by the AACN's DNP Essential VI: Interprofessional Collaboration for Improving Patient and Population Health Outcomes. This writer worked closely with education professionals, both administrators and teachers, throughout the course of this DNP project to implement and evaluate the Daily Mile physical activity program.

This project utilized a program targeting childhood obesity. The Daily Mile program encourages kids of every fitness level to get moving through a teacher-led 15-minute jog/walk. This DNP project encompasses DNP Essential VII: Clinical Prevention and Population Health for Improving the Nation's Health by inclusion of a physical activity program to address one modifiable factor in the prevention and treatment of obesity in the young school-aged child population.

CONCLUSION

Childhood obesity is affecting too many children. Genetics plays an important role in the development of obesity, but appropriate diet and physical activity can modify a person's risks.

The Daily Mile program contributes 15-minutes of additional physical activity during school days. More evidence is needed to evaluate The Daily Mile program's effectiveness in targeting obesity in elementary school-aged children; however, the program was well received at two schools in Montana. It was easy for teachers to implement the program based on the core principles provided by The Daily Mile Foundation.

The project was facilitated by a health professional, but the program was implemented by teachers and schools. Teachers are in an important position to help influence children's behaviors (i.e., diet & exercise) due to the number of hours per week of interaction. The solutions to the obesity epidemic are not likely to be solved by one discipline, instead a collaborative approach is needed.

APPENDIX A:

EVALUATION TABLE FOR EVIDENCE

Author / Article	Phenomena/Hypothesis/ Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
Stakeholders						
Blaine, R. E., Franckle, R. L., Ganter, C., Falbe, J., Giles, C., Criss, S., ... Davison, K. K. (2017). Using school staff members to implement a childhood obesity prevention intervention in low-income school districts: The Massachusetts Childhood Obesity Research Demonstration (MA-CORD project), 2012-2014. *Preventing Chronic Disease, 14*, E03. doi:10.5888/pcd14.160381	What are the key facilitators and barriers to achieving implementation outcomes? Hypothesis: "a classroom-based health behavior intervention for 4th through 7th grade students would be most effective when the school staff felt activities were appropriate, feasible, and supported by district administrators" (p. 2)	Taxonomy for implementation research outcomes of Proctor et al.	Mixed-methods design	Two communities in Massachusetts over two years community 1 schools=6; community 2 schools=22 Teachers eligible to teach MA-CORD curricula: community 1=7 in year 1, 6 in year 2; community 2=117 in year 1, 122 in year 2	Two readiness surveys: one for leaders to assess readiness for adoption and leadership support; one for staff assess staff engagement and support for intervention Semi-structured interviews Year-end teacher curriculum surveys Internal records for census of staff	Appropriateness. 100% (n=35) of teachers in both communities felt curricula were a positive addition (curriculum surveys) Feasibility. Fewer teacher in Community 2 felt competent to teach content (57% vs 86%); teachers in community 1 were health education teachers exclusively. Barriers identified in interviews include competing priorities (standardized tests, anti-bullying curriculum) and burnout Leadership support present in both communities. The majority of teachers planned to continue teaching

Author / Article	Phenomena/Hypothesis/ Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
						the curriculum (100% for Community 1; 76% for Community 2) in the end-of-year two survey.
Clarke, J., Fletcher, B., Lancashire, E., Pallan, M., & Adab, P. (2013). The views of stakeholders on the role of the primary school in preventing childhood obesity: A qualitative systematic review. *Obesity Reviews, 14*(12), 975-988. doi:10.1111/obr.12058	Stakeholders' views on the roles of the primary school in preventing childhood obesity	None identified	Qualitative systematic review	18 qualitative studies	A search of 13 databases followed by data extraction using the Quality Assessment and Review Instrument date extraction tool Thematic analysis	Stakeholders were defined as parents, students, and school staff, governors, or nurses 2 main themes: Consistency needed between school environment, polices and curriculum messages; and, school are a bridge enabling parental involvement in healthy eating and physical activity (PA) 6 broad categories and 37 finer level themes including: Schools have a role in preventing childhood obesity and school stakeholders desire to improve student health by addressing

Author / Article	Phenomena/Hypothesis/ Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
						childhood obesity More opportunities for students to be PA Teachers need to model and participate in PA Non-competitive PA that is inclusive is favored Barriers include lack of funding/resources (i.e. time for PA) and assessment of academic not PA performance
Clarke, J. L., Pallan, M. J., Lancashire, E. R., & Adab, P. (2017). Obesity prevention in English primary schools: Headteacher perspectives. *Health Promotion International, 32*(3), 490-499. doi:10.1093/heapro/dav113	Headteachers' views on role of schools in preventing obesity across an ethnically and socio-economically diverse region in England	None identified	Qualitative (descriptive)	Headteachers=15 Deputy headteachers=7 in 21 schools	Semi-structured interviews followed by thematic data analysis	<u>2 broad categories:</u> Roles and responsibilities of schools (8 sub-themes) and influencing factors (3 sub-themes with 13 finer-level themes) <u>Key sub-themes:</u> Schools play a role in health promotion through curriculum, but parents hold the main responsibility Policies promote consistent messages Health affects

Author / Article	Phenomena/Hypothesis/ Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
						learning Headteachers' personal beliefs and values affect promotion of healthy lifestyles External factors: academic achievement holds greater pressure than health; reluctant to take time away from learning
Langford, R., Bonell, C., Jones, H., & Campbell, R. (2015). Obesity prevention and the health promoting schools framework: Essential components and barriers to success. *The International Journal of Behavioral Nutrition and Physical Activity, 12*, 15. doi:10.1186/s12966-015-0167-7	Process evaluation synthesis identifying factors that facilitated or created barriers to interventions targeting obesity in schools	None identified	Systematic review of quantitative and qualitative studies	26 eligible studies	A search of 20 databases followed by thematic synthesis using a Framework approach	<u>Acceptability</u> of wide range of interventions generally high; teachers initially resistant but resistance reduced as they gained more education and experience with the intervention <u>Facilitators:</u> intervention relevant to school and needs within the school; communication and training; work with school to develop intervention that aligns with

Author / Article	Phenomena/Hypothesis/ Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
						teachers' goals Barriers: lack of institutional support; teacher absences
Turner, L., Slater, S. J., & Chaloupka, F. J. (2013). Support for school-based obesity prevention efforts: Attitudes among administrators at nationally representative samples of U.S. elementary schools. *Child Obesity, 9*(4), 311-318. doi:10.1089/chi.2013.0029	Attitudes of school administrators regarding childhood obesity		Quantitative (descriptive)	Surveys sent to 1070 public schools and 400 private elementary school principals (must include at least a 3rd grade class to be eligible) across the U.S. during the school years being in 2006, 2007, 2008, and 2010 Response rate for public schools ranged from 54.6% to 70.6%; private schools' response rate ranged from 66.2% to 84.4%	Mail-back surveys	Majority (76.3%) of administrators were concerned about children at their schools being overweight >90% express an interest in encouraging students to obtain more PA Almost all (99%) believe physically active students perform better in other classroom activities Administrators believe schools can play a role in addressing childhood obesity problem
Role of Schools and Physical Activity						
Baranowski, T., O'Connor, T., Johnston, C., Hughes, S., Moreno, J., Chen, T. A., . . . Baranowski, J. (2014). School year versus	Summertime vs school year changes (seasonal differences) in body mass index (BMI) and physical activity (PA)	None identified	Narrative review	Not directly identified in article; believe 19 studies/reviews included	Search terms/databases/ methods not identified by authors	Weight loss during school year and weight gain during summer for overweight and

Author / Article	Phenomena/Hypothesis/ Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
summer differences in child weight gain: A narrative review. *Child Obesity, 10*(1), 18-24. doi:10.1089/chi.2013.0116						obese children; not always found to be true for healthy weight children. However, that is in contraction with studies reviewed that indicate activity is greater in the summer and less in the winter.
Kelley, G. A., & Kelley, K. S. (2013). Effects of exercise in the treatment of overweight and obese children and adolescents: A systematic review of meta-analyses. *Journal of Obesity, 2013*, 783103. doi:10.1155/2013/783103	Determine the effects of exercise on overweight and obese children and adolescents	None identified	Systematic review of previous meta-analyses	Two meta analyses	Nine databases searched; followed by data extraction of overall results from prior meta-analyses meeting criteria	Exercise reduces body fat percentage for children and adolescents who are overweight or obese
Shirley, K., Rutfield, R., Hall, N., Fedor, N., McCaughey, V. K., & Zajac, K. (2015). Combinations of obesity prevention strategies in us elementary schools: A critical review. *Journal of Primary Prevention, 36*(1), 1-20. doi:10.1007/s10935-014-0370-3	Evaluate the effectiveness of childhood obesity prevention programs in US elementary school children on BMI	None identified	Critical review	12 articles meeting inclusion criteria	Two databases searched using three different search strategies; results evaluated for meeting selection criteria	Three PA-only interventions involved the addition of PA during class time Single intervention programs did not effectively reduce BMI Combination interventions (education, nutrition, and PA) sustained long-term

Author / Article	Phenomena/Hypothesis/ Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
						are more likely to be effective obesity prevention programs
Sobol-Goldberg, S., Rabinowitz, J., & Gross, R. (2013). School-based obesity prevention programs: A meta-analysis of randomized controlled trials. *Obesity (Silver Spring), 21*(12), 2422-2428. doi:10.1002/oby.20515	Efficacy of school-based obesity prevention programs Hypothesis: Studies that were comprehensive (informative, behavioral and environmental) at least one year long with parental support would have the greatest effect	None identified	Systematic review and meta-analysis	32 randomized controlled trials (RCTs) with 52,109 participants from 2006 to 2012	Nine databases searched; Comprehensive Meta-analysis software package (Version 2.2)	School-based obesity prevention programs had greater effectiveness on children, not teenagers. The most effective interventions were the ones that were comprehensive, had parental support, and last at least one year.
Wang, Y., Cai, L., Wu, Y., Wilson, R. F., Weston, C., Fawole, O., . . . Segal, J. (2015). What childhood obesity prevention programmes work? A systematic review and meta-analysis. *Obesity Reviews, 16*(7), 547-565. doi:10.1111/obr.12277	Evaluate the effectiveness of childhood obesity prevention programs in various settings	None identified	Systematic review and meta-analysis	139 RCTs, quasi-experimental studies, and natural experiments studies in 147 articles that had an intervention (115 school-based interventions/18 school-based PA-only interventions)	Five databases searched and data extracted Meta-analyses were done when three RCTs studies had similar intervention and setting	83% of studies were school-based programs School-based PA-only interventions were found to have moderate strength of evidence

APPENDIX B:

ATTENTION PRESENTATION

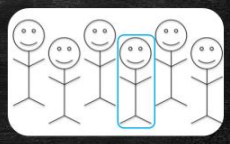
GROWING Kids

Targeting Obesity in School-Age Children

The Problem

1 in 6

U.S. children are obese



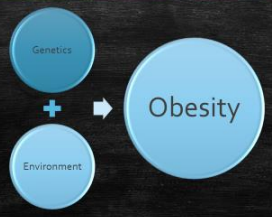
Health Risks

Immediate

- Prediabetes/Type 2 Diabetes
  - increased insulin resistance
- Elevated blood pressure
- Sleep disorders
- Depression
- Social isolation
  - at risk for being bullied

Long-term

- More likely to become obese adults
  - increased risks for heart disease, diabetes, stroke, & cancers



Modifiable Risk Factors

Diet

- Increase intake of nutrient rich foods
  - need improved access for all children
  - fruits and vegetables
- Reduce intake of sugar sweetened beverages
  - soda and juice

Activity

- Set limits on "screen time"
  - reduces sedentary behaviors
- Encourage daily physical activity
  - children need safe and engaging areas for physical activity

The Daily Mile

One intervention to address childhood obesity in schools

15 minute
daily, non-competitive
walk, jog, or run
for all students and teachers

Keep it simple
Teachers designate time during school day
A bonus: does not replace P.E. or recess
No equipment or clothing changes necessary

Students look forward to daily mile
Teachers report increased classroom focus
Medically safe for children over 3 years old
Tackles sedentary behaviors
Self-esteem and resilience increased

Visit these sites for more information:

http://www.cdc.gov/HealthySchools/
https://www.cdc.gov/obesity/childhood/
http://thedailymile.co.uk/

Let's get moving!

In our schools to prevent and modify childhood obesity

de Grassi, A. (1981). Clockwork. On *Awake: Sounds of Aromatherapy: Uplifting songs for mind and spirit* [CD track 1]. New Albany, OH: Windham Hill Records/BMG Special Products.

APPENDIX C:

PRESENTATION TO TEACHERS AND ADMINISTRATORS

The Daily Mile Project

Presentation Objectives

- Overview of project
- What is The Daily Mile?
- Review project timeline
- Contact information

Project Purpose Statement

The purpose of this Doctor of Nursing Practice project is to determine if a structured activity program (i.e. The Daily Mile program) can be implemented in the first thru third grade classrooms of two Montana schools.

The study question is: Is it feasible to implement The Daily Mile program in the first thru third grade classes of two rural Montana schools?

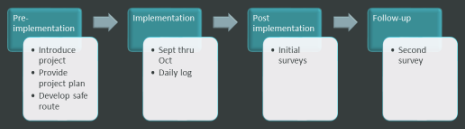
About The Daily Mile Program

- Started in 2012 by a headteacher at a Scottish primary school to address physical fitness and obesity of the students in her school
- Grown to more the 1500 schools in the UK
  - 3300 schools worldwide
  - <50 in the US
- Free and requires minimal resources to implement
- Teacher-led

Core Principles of The Daily Mile Program

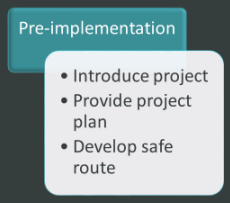
- Make it **FUN**. It is a non-competitive jog/walk.
- It is **100%** inclusive.
- Treat the **WEATHER** as a benefit not a barrier.
- Design an appropriate **ROUTE**.
- It is a **QUICK** 15-minute turnaround from leaving classroom until returning.
- **RISK** assess your route.
- Try to go out **EVERY DAY** to gain and maintain full benefits.
- No **CLOTHING** changes.
- Students should **OWN IT**.
- Keep it **SIMPLE**.

Timeline



Pre-implementation

- Starts now
- Letter to students' parents/caregivers
- Video conferences
- Route development



Route Development

- Completed during first weeks of school
- Should allow for students to complete 5-10 laps during 15 minutes of jogging/running
- Use route risk assessment provided by The Daily Mile Foundation

Implementation

Implementation

- Sept thru Oct
- Daily log

- Target is September 1st thru October 31st
- Teachers complete log each day during implementation time period for data collection
- Emails of encouragement

Sample Daily Log

Date_____
The Daily Mile…
☐ ***was completed today.***
☐ ***was NOT completed today.***
- ❖ *Reasons why couldn't be completed include (check all that apply):*
  - ☐ *weather*
  - ☐ *children's dress/footwear*
  - ☐ *time constraint*
  - ☐ *other_____*

Post implementation

- Initial surveys to be sent at the completion of the implementation period
- Target: first week of November

Post implementation

- Initial surveys

Follow-up

Follow-up

- Second survey

- 2 question follow-up survey sent to teachers in December

Questions or Concerns? Contact information:

Stacee Lyders

slyders@email.arizona.edu

Will respond within 2-3 business days

Script for voiceover PowerPoint presentation:

Hello my name is Stacee Lyders. I am a doctor of nursing practice student at the university of Arizona in Tucson. Welcome to this presentation about the implementation of the Daily Mile Project in your classrooms.

We will be reviewing the purpose of my project, more about the Daily Mile, and the projected timeline. Additionally, my contact information is given at the end and I look forward to hearing from you.

The purpose of the DNP project is to determine if The Daily Mile program can implemented in the first thru third grade classrooms of two Montana schools. It attempts to answer the question Is it feasible to implement The Daily Mile program in the first thru third grade classes of two rural Montana schools?

The Daily Mile program is a free program. It is a teacher-led non-competitive 15-minute jog/run in which all classroom students participate. It was created in 2012 by a headteacher at a Scottish primary school to address physical fitness and obesity of the students at her school. It has since been implemented over 3300 schools world-wide, but less than 50 of those schools are in the United States, primarily on the east coast.

Ten core principles guide the successful implementation of the Daily Mile in schools. It is key to stress the non-competitive aspect and 100% inclusion which means every child and teacher participates at his or her own level. Route design and assessment is discussed in more detail later on. The program is designed for elementary school aged children as they don't require clothing changes after physical activity. It should be kept simple and quick.

Next we'll review the timeline for the project. Each of these is discussed in more detail on the following slides.

This presentation is part of pre-implementation. I am working with school administration to determine best way to get a letter home to the students' guardians. I will make myself available for the next two weeks to answer questions or address concerns via video conferencing as needed or requested. Route development takes place during this time and is discussed on the next slide.

The Daily Mile encourages each school to develop their own route with the following principle in mind: it should be small enough to allow 5-10 loops during 15 minutes of running or jogging. The Daily Mile Foundation provides a sample route risk assessment. I have included in the information sent with this presentation.

Implementation is the period when teachers include the program into their daily class routines. I have here September 1st as the start date, but as that is a Saturday it will really be Sept 4 (after labor day) going thru October. Each day a quick daily log will be completed by the teacher and I will work with school administrators to get the logs either scanned and sent electronically or the

hard copies at the end of the implementation period. Additionally, you will receive frequent emails of encouragement to continue the daily mile program in your classrooms from me throughout the implementation period.

These are the questions on the daily log. It was designed to take minimal time for teachers to complete each day.

In early November, I will be sending out the first two electronic surveys. One to teachers and one to school administrators. They are brief surveys with 12 and 3 questions respectively and should take no more than 15 minutes to complete the longer of the two.

Before starting this project I had to obtain approval from the Daily Mile Foundation in England to utilize their program. I had a video meeting with them last August. During that meeting, they told me that in their experience most schools continue the daily mile program if they make it 6-8 weeks. The follow-up survey assesses whether or not the program was sustained past the implementation period and is expected to take less than 10 minutes to complete.

During the project, I can be reached by email and will do my best to respond in a timely manner. I look forward to hearing from you with your questions, concerns, excitement or hesitation. I also encourage you to explore the Daily Mile's website as shared in the email containing this presentation. This concludes my presentation. Thank you for your attention.

APPENDIX D:

PARENT LETTER

Dear Parent(s),

I would like to inform you of a DNP project taking place in your child's classroom this year. I am a Doctor of Nursing Practice student at the University of Arizona. I selected a project to address obesity in school-aged children. One in six children ages 6 to 11 years old in the United States is obese. Additionally, Healthy People 2020 has set an objective to reduce obesity in this age group by 10 percent. One factor contributing to this epidemic is increasing sedentary activities and decreased physical activity among our youth.

Starting in September through October, your child's teacher will be incorporating The Daily Mile program in their classroom. The Daily Mile program is a teacher-led, noncompetitive 15 minute jog/run at the child's own pace. *All* children and the teacher participate. It was created by a headteacher at a Scottish primary school to address physical fitness and obesity of the students in her school. I have obtained approval from The Daily Mile Foundation to utilize their program in my DNP project.

Individual child data will not be collected, and they will not be surveyed. I will be surveying the teachers and school administrators only. I encourage you to explore The Daily Mile's website (https://thedailymile.co.uk/) for more information or reach out to me with any further questions or concerns.

Let's get moving…in our schools,

Stacee Lyders, DNP-PNP student, RN, BAN, CPN, CPEN
slyders@email.arizona.edu

APPENDIX E:

SAMPLE DAILY LOG

Sample Daily Log

Date_____

The Daily Mile…

- ☐ **was completed today.**
- ☐ **was NOT completed today.**
  - ❖ Reasons why couldn't be completed include (check all that apply):
    - ☐ weather
    - ☐ children's dress/footwear
    - ☐ time constraint
    - ☐ other

_____

Date_____

The Daily Mile…

- ☐ **was completed today.**
- ☐ **was NOT completed today.**
  - ❖ Reasons why couldn't be completed include (check all that apply):
    - ☐ weather
    - ☐ children's dress/footwear
    - ☐ time constraint
    - ☐ other

_____

Date_____

The Daily Mile…

- ☐ **was completed today.**
- ☐ **was NOT completed today.**
  - ❖ Reasons why couldn't be completed include (check all that apply):
    - ☐ weather
    - ☐ children's dress/footwear
    - ☐ time constraint
    - ☐ other

_____

Date_____

The Daily Mile…

- ☐ **was completed today.**
- ☐ **was NOT completed today.**
  - ❖ Reasons why couldn't be completed include (check all that apply):
    - ☐ weather
    - ☐ children's dress/footwear
    - ☐ time constraint
    - ☐ other

_____

Date_____

The Daily Mile…

- ☐ **was completed today.**
- ☐ **was NOT completed today.**
  - ❖ Reasons why couldn't be completed include (check all that apply):
    - ☐ weather
    - ☐ children's dress/footwear
    - ☐ time constraint
    - ☐ other

_____

Notes from this week:

APPENDIX F:

INITIAL TEACHER SURVEY

Initial Teacher Survey

Demographic

Years in teaching

- ☐1-5
- ☐6-10
- ☐11-15
- ☐16-20
- ☐>20

Years at this school

- ☐1
- ☐2
- ☐3
- ☐4
- ☐>4

Number of students in class for 2018-2019 school year_____

Program Evaluation

Please answer the following questions using this scale:
1—strongly disagree
2—disagree
3—neither agree nor disagree
4—agree
5—strongly agree

I did not know the severity of the childhood obesity problem prior to participation in this project.
Schools can play an important part of obesity prevention.
The Daily Mile program in schools addresses one dimension (i.e. decreased physcial activity) of obesity in children.
I found it easy to incorporate 15-minutes of physical activity into my lesson plans each day.
The majority of students looked forward to their Daily Mile each day.
I was able to include all students in The Daily Mile.
I benefited from participation along with my students.

Do you plan to continue The Daily Mile in your classroom?

- ☐Yes
- ☐No
- ☐Undecided

Is there anything else you would like to add about the project or The Daily Mile program?

APPENDIX G:

FOLLOW-UP TEACHER SURVEY

Follow-up Teacher Survey

Since completion of the study, I have used The Daily Mile program an average of:

- ☐0 days per week
- ☐1 day per week
- ☐2 days per week
- ☐3 days per week
- ☐4 days per week
- ☐5 days per week

What factors influence your decision to continue or discontinue the use of The Daily Mile in your classroom?

APPENDIX H:

ADMINISTRATOR SURVEY

Administrator Survey

Please answer the following questions using this scale:
1—strongly disagree
2—disagree
3—neither agree nor disagree
4—agree
5—strongly agree

Elementary schools can play a role in obesity prevention.
The resources necessary to implement The Daily Mile program are reasonable.
I would like to see The Daily Mile continue in my school.

APPENDIX I:

PRIMARY DISCLOSURE STATEMENT

Primary Disclosure Statement

Evaluation of a Daily Activity Program for Early School-Age Children in a Rural Setting

Stacee Lyders

The Daily Mile implementation and associated surveys are part of a Doctor of Nursing Practice project to evaluate feasibility of The Daily Mile program. You will be asked to implement the program according to its core principles. Additionally, classroom teachers will be asked to complete two surveys at two points after the implementation period; school administrators will be asked to complete one survey. The initial teacher survey is 12 questions and should take 10-15 minutes to complete. The follow-up teacher survey is two questions that should take less than 10 minutes to complete. The administrator survey is three questions that are expected to take less than five minutes to complete. There are no foreseeable risks associated with project participation. Participation in this project is voluntary and will remain anonymous.

If you choose to participate in this project, you may choose to discontinue participation at any time without penalty. You may skip any question that you choose not to answer. By participating, you do not give up any personal legal rights that you may have as a participant of this study. An Institutional Review Board responsible for human subjects' research at The University of Arizona reviewed this research project and found it to be acceptable, according to the applicable state and federal regulations and University policies designed to protect the rights and welfare of participants in research. For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact the Human Subjects Protection Program at 520-626-6721 or online at http://rgw.arizona.edu/compliance/human-subjects-protection-program.

The final date to complete the initial surveys is November 14, 2018. The final day to complete the follow-up survey is December 31, 2018. For questions, concerns, or complaints about the study, you may call Stacee Lyders, RN, BAN, CPN, CPEN at 520-344-9034 or via email at slyders@email.arizona.edu.

By taking this survey, you agree to have your responses used for purposes related to the project.

APPENDIX J:

THE UNIVERSITY OF ARIZONA INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

THE UNIVERSITY OF ARIZONA
Research, Discovery & Innovation

Human Subjects Protection Program

1618 E. Helen St.
P.O.Box 245137
Tucson, AZ 85724-5137
Tel: (520) 626-6721
http://rgw.arizona.edu/compliance/home

Date:	July 17, 2018
Principal Investigator:	Stacee Lyders
Protocol Number:	1807758529
Protocol Title:	Evaluation of a Daily Activity Program for Early School-Age Children in a Rural Setting
Determination:	Human Subjects Review not Required

Documents Reviewed Concurrently:

Data Collection Tools: *Lyders_Appendix B_Attention Presentation.docx*
Data Collection Tools: *Lyders_Appendix C_Teacher Presentation.docx*
Data Collection Tools: *Lyders_Appendix D_Parent Letter.docx*
Data Collection Tools: *Lyders_Appendix E_Daily Log.docx*
Data Collection Tools: *Lyders_Appendix F_Teacher Survey.docx*
Data Collection Tools: *Lyders_Appendix G_Followup Teacher Survey.docx*
Data Collection Tools: *Lyders_Appendix G_Followup Teacher Survey.docx*
Data Collection Tools: *Lyders_Appendix H_Administrator Survey.docx*
HSPP Forms/Correspondence: *Advisor Confirmation Email_Lyders.pdf*
HSPP Forms/Correspondence: *Lyders_IRBDetermination.pdf*
Informed Consent/PHI Forms: *Lyders_disclosure letter.docx*
Other: *Lyders_School2.pdf*
Other Approvals and Authorizations: *Lyders_Permission to utilize program.pdf*
Other Approvals and Authorizations: *Lyders_School1.pdf*

Regulatory Determinations/Comments:

- Not Research as defined by 45 CFR 46.102(d): As presented, the activities described above do not meet the definition of research cited in the regulations issued by U.S. Department of Health and Human Services which state that "research means a systematic investigation, including research development, testing and evaluation, designed to contribute to generalizable knowledge."

The project listed above does not require oversight by the University of Arizona.

If the nature of the project changes, submit a new determination form to the Human Subjects Protection Program (HSPP) for reassessment. Changes include addition of research with children, specimen collection, participant observation, prospective collection of data when the study was previously retrospective in nature, and broadening the scope or nature of the study activity. Please contact the HSPP to consult on whether the proposed changes need further review.

The University of Arizona maintains a Federalwide Assurance with the Office for Human Research Protections (FWA #00004218).

APPENDIX K:

THE DAILY MILE FOUNDATION PERMISSION TO UTILIZE

THE UNIVERSITY OF ARIZONA.

Stacee Lyders <slyders@email.arizona.edu>

Re: Permission to utilize program

1 message

Holly Eager <holly@thedailymile.co.uk> Fri, Oct 20, 2017 at 2:13 AM
To: Stacee Lyders <slyders@email.arizona.edu>
Cc: Admin User <info@thedailymile.co.uk>

Hi Stacee,

It was wonderful to speak with you yesterday, and to see your passion and enthusiasm for the project shine through.

In terms of obtaining official permission from TDMF to study the impact of the initiative, I hope the following will suffice:

Thank you for reaching out to us to discuss your DNP project; having discussed further with yourself I am delighted to grant you permission to implement The Daily Mile in 1-2 Elementary Schools, as per our core principles and implementation guidance.

Lara will be in touch with you shortly with the research summary and implementation guidance, for your records.

Feel free to reach out to us anytime if you have any further questions.

Good luck!

Holly

Please note: **Trademark permission requests** will be dealt with on Tuesdays and Thursdays.

Holly Eager
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REFERENCES

Al-Tawfiq J. A., & Pittet, D. (2013). Improving hand hygiene compliance in healthcare settings using behavior change theories: Reflections. *Teaching and Learning in Medicine, 25*(4), 374-382. doi:10.1080/10401334.2013.827575

Amaro, D. (2014). *A designed research study examining the impact of using a motivational model for mastering the crash cart*. (Doctoral Dissertation). Wayne State University. Detroit, MI. Retrieved from http://digitalcommons.wayne.edu/oa_dissertations

American Academy of Pediatrics. (2015). *Energy out: Daily physical activity recommendations*. Retrieved from https://www.healthychildren.org/English/healthy-living/fitness/Pages/Energy-Out-Daily-Physical-Activity-Recommendations.aspx

American Association of Colleges of Nursing. (2006). *The essentials of doctoral education for advanced nurisng practice.* Retrieved from https://www.aacnnursing.org/Portals/42/Publications/DNPEssentials.pdf

Baranowski, T., O'Connor, T., Johnston, C., Hughes, S., Moreno, J., Chen, T. A., ... Baranowski, J. (2014). School year versus summer differences in child weight gain: A narrative review. *Child Obesity, 10*(1), 18-24. doi:10.1089/chi.2013.0116

Bass, R. & Eneli, I. (2015). Severe childhood obesity: An under-recognised and growing health problem. *Postgraduate Medical Journal, 91*(1081), 639-645. doi:10.1136/postgradmedj-2014-133033

Blaine, R. E., Franckle, R. L., Ganter, C., Falbe, J., Giles, C., Criss, S., ... Davison, K. K. (2017). Using school staff members to implement a childhood obesity prevention intervention in low-income school districts: The Massachusetts Childhood Obesity Research Demonstration (MA-CORD Project), 2012-2014. *Preventing Chronic Disease, 14*, E03. doi:10.5888/pcd14.160381

Bowen, D. J., Kreuter, M., Spring, B., Cofta-Woerpel, L., Linnan, L., Weiner, D., ... Fernandez, M. (2009). How we design feasibility studies. *American Journal of Preventive Medicine, 36*(5), 452-457. doi:10.1016/j.amepre.2009.02.002

Breheny, K., Adab, P., Passmore, S., Martin, J., Lancashire, E., Hemming, K., & Frew, E. (2018). A cluster randomised controlled trial evaluating the effectiveness and cost-effectiveness of the daily mile on childhood obesity and wellbeing; the Birmingham daily mile protocol. *BMC Public Health, 18*(1), 126. doi:10.1186/s12889-017-5019-8

Centers for Disease Control and Prevention. (2015a). *Childhood obesity causes and consequences*. Retrieved from http://www.cdc.gov/obesity/childhood/causes.html

Centers for Disease Control and Prevention. (2015b). *Measuring physical activity intensity*. Retrieved from https://www.cdc.gov/physicalactivity/basics/measuring/index.html

Centers for Disease Control and Prevention. (2015c). *Youth risk behavior surveillance system (YRBSS): Montana 2015 results*. Retrieved from https://nccd.cdc.gov/Youthonline/App/Results.aspx?TT=C&OUT=0&SID=HS&QID=QNOBESE&LID=MT&YID=2015&LID2=&YID2=&COL=T&ROW1=N&ROW2=N&HT=C02&LCT=LL&FS=S1&FR=R1&FG=G1&FSL=S1&FRL=R1&FGL=G1&PV=&TST=False&C1=&C2=&QP=G&DP=1&VA=CI&CS=Y&SYID=&EYID=&SC=DEFAULT&SO=ASC

Centers for Disease Control and Prevention. (2016). *BRFSS prevalence & trends data*. Retrieved from https://nccd.cdc.gov/BRFSSPrevalence/rdPage.aspx?rdReport=DPH_BRFSS.ExploreByLocation&rdProcessAction=&SaveFileGenerated=1&irbLocationType=States&islLocation=30&islState=&islCounty=&islClass=CLASS14&islTopic=TOPIC09&islYear=2016&hidLocationType=States&hidLocation=30&hidClass=CLASS14&hidTopic=TOPIC09&hidTopicName=BMI+Categories&hidYear=2016&irbShowFootnotes=Show&rdICL-iclIndicators=_BMI5CAT&iclIndicators_rdExpandedCollapsedHistory=&iclIndicators=_BMI5CAT&hidPreviouslySelectedIndicators=&DashboardColumnCount=2&rdShowElementHistory=divTopicUpdating%3dHide%2cislTopic%3dShow%2cdivYearUpdating%3dHide%2cislYear%3dShow%2c&rdScrollX=0&rdScrollY=228&rdRnd=68411

Centers for Disease Control and Prevention. (2017). *Physcial activity facts*. Retrieved from https://www.cdc.gov/healthyschools/physicalactivity/facts.htm

Centers for Disease Control and Prevention. (2018). *Recess*. Retrieved from https://www.cdc.gov/healthyschools/physicalactivity/recess.htm

Chesham, R. A., Booth, J. N., Sweeney, E. L., Ryde, G. C., Gorely, T., Brooks, N. E., & Moran, C. N. (2018). The Daily Mile makes primary school children more active, less sedentary and improves their fitness and body composition: A quasi-experimental pilot study. *BMC Medicine, 16*(1), 64. doi:10.1186/s12916-018-1049-z

Chiocca, E. M. (2015). *Advanced pediatric assessment* (2nd ed.). New York, NY: Springer Publishing Company, LLC.

Choquet, H. & Meyre, D. (2011). Genetics of obesity: What have we learned? *Current Genomics, 12*(3), 169-179. doi:10.2174/138920211795677895

Ciocca, M., Ramonet, M., & Alvarez, F. (2016). Non-alcoholic fatty liver disease: A new epidemic in children. *Archivos Argentinos de Pediatría, 114*(6), 563-569. doi:10.5546/aap.2016.eng.569

Clarke, J., Fletcher, B., Lancashire, E., Pallan, M., & Adab, P. (2013). The views of stakeholders on the role of the primary school in preventing childhood obesity: A qualitative systematic review. *Obesity Reviews, 14*(12), 975-988. doi:10.1111/obr.12058

Clarke, J. L., Pallan, M. J., Lancashire, E. R., & Adab, P. (2017). Obesity prevention in English primary schools: Headteacher perspectives. *Health Promotion International, 32*(3), 490-499. doi:10.1093/heapro/dav113

Fairhurst, A. & Hotham, S. (2017). Going further than the 'Daily Mile.' *Perspect Public Health, 137*(2), 83-84. doi:10.1177/1757913916685639

Gao, Z., Chen, S., Huang, C. C., Stodden, D. F., & Xiang, P. (2017). Investigating elementary school children's daily physical activity and sedentary behaviours during weekdays. *Journal of Sports Sciences, 35*(1), 99-104. doi:10.1080/02640414.2016.1157261

Hardcastle, S. J., Hancox, J., Hattar, A., Maxwell-Smith, C., Thøgersen-Ntoumani, C., & Hagger, M. S. (2015). Motivating the unmotivated: How can health behavior be changed in those unwilling to change? *Frontiers in Psychology, 6,* 835. doi:10.3389/fpsyg.2015.00835

Hawkes, N. (2018). Sixty seconds on ... The Daily Mile. *BMJ, 361,* k2142. doi:10.1136/bmj.k2142

Healthy People. (2016). *Nutrition and weight status: Objectives*. Retrieved from https://www.healthypeople.gov/2020/topics-objectives/topic/nutrition-and-weight-status/objectives

Healthy People. (2018). P*hysical activity: Objectives*. Retrieved from https://www.healthypeople.gov/2020/topics-objectives/topic/physical-activity/objectives

Himmel, F., Desch, S., & Wolfrum, S. (2015). [implementation of therapeutic hypothermia into clinical practice]. *Deutsche Medizinische Wochenschrift, 140*(16), 1209-1212. doi:10.1055/s-0041-103570

Institute of Medicine. (2004). *Childhood obesity in the United States: Facts and figures*. Retrieved from http://www.nationalacademies.org/hmd/~/media/Files/Report%20Files/2004/Preventing-Childhood-Obesity-Health-in-the-Balance/FINALfactsandfigures2.pdf

Kellar, S. P. & Kelvin, E. A. (2013). Organizing, displaying, and describing data. In *Munro's statistical methods for health care research* (6th ed., pp. 19-60). Philadelphia, PA: Wolters Kluwer | Lippincott Williams & Wilkins.

Keller, J. M. (1987). Development and use of the ARCS model of instructional design. *Journal of Instructional Development, 10*(3), 2-10.

Keller, J. M. (2010). The ARCS model of motivational design. In J. M. Keller (Ed.), *Motivational design for learning and performance: The ARCS model approach* (pp. 43-74). Boston, MA: Springer US.

Kelley, G. A. & Kelley, K. S. (2013). Effects of exercise in the treatment of overweight and obese children and adolescents: A systematic review of meta-analyses. *Journal of Obesity, 2013,* 783103. doi:10.1155/2013/783103

Langford, R., Bonell, C., Jones, H., & Campbell, R. (2015). Obesity prevention and the health promoting schools framework: Essential components and barriers to success. *The International Journal of Behavioral Nutrition and Physical Activity, 12*, 15. doi:10.1186/s12966-015-0167-7

Michael, S. L., Merlo, C. L., Basch, C. E., Wentzel, K. R., & Wechsler, H. (2015). Critical connections: Health and academics. *Journal of School Health, 85*(11), 740-758. doi:10.1111/josh.12309

Moran, K. & Burson, R. (2017). The phenomenon of interest. In K. Moran, R. Burson, & D. Conrad (Eds.), *The doctor of nursing practice scholarly project: A framework for success* (2nd ed., pp. 89-116). Burlington, MA: Jones & Bartlett Learning.

Ogden, C. L., Carroll, M. D., Fryar, C. D., & Flegal, K. M. (2015). *Prevalence of obesity among adults and youth: United States, 2011-2014*. Retrieved from http://www.cdc.gov/nchs/data/databriefs/db219.pdf

Ogden, C. L., Carroll, M. D., Lawman, H. G., Fryar, C. D., Kruszon-Moran, D., Kit, B. K., & Flegal, K. M. (2016). Trends in obesity prevalence among children and adolescents in the United States, 1988-1994 through 2013-2014. *JAMA*, *315*(21), 2292-2299. doi:10.1001/jama.2016.6361

Polit, D. F. & Beck, C. T. (2012). Evidence-based nursing: Translating research evidence into practice. In *Nursing research: Generating and assessing evidence for nursing practice* (9th ed., pp. 25-47). Philadelphia, PA: Wolters Kluwer Health | Lippincott Williams & Wilkins.

Potera, C. (2017). Physical activity in schools declines, obesity rates climb: What can be done? *American Journal of Nursing, 117*(1), 19-20. doi:10.1097/01.NAJ.0000511557.15125.a4

Roman-Vinas, B., Chaput, J. P., Katzmarzyk, P. T., Fogelholm, M., Lambert, E. V., Maher, C., ... Tremblay, M. S. (2016). Proportion of children meeting recommendations for 24-hour movement guidelines and associations with adiposity in a 12-country study. *The International Journal of Behavioral Nutrition and Physical Activity, 13*(1), 123. doi:10.1186/s12966-016-0449-8

Ryan, K. J., Brady, J. V., Cooke, R. E., Height, D. I., Jonsen, A. R., King, P., ... Turtle, R. H. (1979). T*he Belmont Report: Ethical principles and guidelines for the protection of human subjects of research*. https://www.hhs.gov/ohrp/sites/default/files/the-belmont-report-508c_FINAL.pdf

Ryde, G. C., Booth, J. N., Brooks, N. E., Chesham, R. A., Moran, C. N., & Gorely, T. (2018). The Daily Mile: What factors are associated with its implementation success? *PLoS One, 13*(10), e0204988. doi:10.1371/journal.pone.0204988

Serdaroglu, F., Koca, Y. S., Saltik, F., Koca, T., Dereci, S., Akcam, M., & Akcam, F. Z. (2016). Gallstones in childhood: Etiology, clinical features, and prognosis. *European Journal of Gastroenterology and Hepatology, 28*(12), 1468-1472. doi:10.1097/meg.0000000000000726

Shirley, K., Rutfield, R., Hall, N., Fedor, N., McCaughey, V. K., & Zajac, K. (2015). Combinations of obesity prevention strategies in us elementary schools: A critical review. *Journal of Primary Prevention, 36*(1), 1-20. doi:10.1007/s10935-014-0370-3

Sobol-Goldberg, S., Rabinowitz, J., & Gross, R. (2013). School-based obesity prevention programs: A meta-analysis of randomized controlled trials. *Obesity (Silver Spring), 21*(12), 2422-2428. doi:10.1002/oby.20515

Stockdale, J., Sinclair, M., & Kernohan, W. G. (2014). Applying the ARCS design model to breastfeeding advice by midwives in order to motivate mothers to personalise their experience. *Evidence Based Midwifery, 12*(1), 4-10.

The Daily Mile Foundation. (n.d.). *The Daily Mile: Children fit for life*. Retrieved from https://thedailymile.co.uk/

The State of Obesity. (2018). *The state of obesity in Montana*. Retrieved from https://stateofobesity.org/states/mt/

Time and Date AS. (2019a). *Climate & weather averages in Great Falls, Montana, USA*. Retrieved from https://www.timeanddate.com/weather/usa/great-falls/climate

Time and Date AS. (2019b). *Climate & weather averages in Stirling, Scotland, United Kingdom*. Retrieved from https://www.timeanddate.com/weather/uk/stirling/climate

Turner, L., Slater, S. J., & Chaloupka, F. J. (2013). Support for school-based obesity prevention efforts: Attitudes among administrators at nationally representative samples of U.S. elementary schools. *Child Obesity, 9*(4), 311-318. doi:10.1089/chi.2013.0029

Tymkow, C. (2017). Clinical scholarship and evidence-based practice. In M. E. Zaccagnini & K. W. White (Eds.), *The doctor of nursing practice essentials: A new model for advanced practice nursing* (3rd ed., pp. 67-143). Burlington, MA: Jones & Bartlett Learning.

U.S. Department of Health and Human Services. (2014). *Nutrition, physical activity, and obesity-women, infant, and child*. Retrieved from https://catalog.data.gov/dataset?tags=wic

United States Census Bureau. (2017). *Quick facts: Montana*. Retrieved from https://www.census.gov/quickfacts/fact/table/MT/AGE115210#viewtop

University of Illnois Extension. (2018). *Ages & stages--school age children*. Retrieved from https://extension.illinois.edu/babysitting/age-school.cfm

Wang, Y., Cai, L., Wu, Y., Wilson, R. F., Weston, C., Fawole, O., ... Segal, J. (2015). What childhood obesity prevention programmes work? A systematic review and meta-analysis. *Obesity Reviews, 16*(7), 547-565. doi:10.1111/obr.12277

Waters, E., de Silva-Sanigorski, A., Hall, B. J., Brown, T., Campbell, K. J., Gao, Y., ... Summerbell, C. D. (2011). Interventions for preventing obesity in children. *Cochrane Database of Systematic Reviews*(12), Cd001871. doi:10.1002/14651858.CD001871.pub3

White, K. W. & Zaccagnini, M. E. (2017). A template for the DNP project. In M. E. Zaccagnini & K. W. White (Eds.), *The doctor of nursing practice essentials: A new model for advance practice-nursing* (3rd ed., pp. 441-501). Burlington, MA: Jones & Bartlett Learning.

Wongwiwatthananukit, S. & Popovich, N. G. (2000). Applying the ARCS model of motivational design to pharmaceutical education. *American Journal of Pharmaceutical Education, 64*(2), 188-196.

World Health Organization. (2012). *Population-based approaches to childhood obesity prevention*. Retrieved from Geneva, Switerland http://apps.who.int/iris/bitstream/10665/80149/1/9789241504782_eng.pdf

Year/grade placement. (n.d.). Retrieved from https://www.acs-schools.com/acs-hillingdon-class-ages

Yousey, Y. K. (2017). Developmental management of school-age children. In C. E. Burns, A. M. Dunn, M. A. Brady, N. B. Starr, C. G. Blosser, & D. L. Garzon (Eds.), *Pediatric primary care* (6th ed., pp. 101-120). St. Louis, MO: Elsevier.